

We claim:

1 1. A method to compensate for a step DC disturbance in a digital baseband signal
2 in a homodyne radio receiver, comprising the following steps:
3 a) determining a time Tst at which the step DC disturbance occurs within a burst;
4 b) calculating various time profiles of the step DC disturbance for two or more
5 times around Tst;
6 c) calculating these profiles from the digital baseband signal in order to produce
7 the various step-corrected baseband signal versions;
8 d) evaluating the various step-corrected baseband signal versions which are
9 obtained in this way, on the basis of a predetermined criterion; and
10 e) selecting one of the step-corrected baseband signal versions as a function of the
11 evaluation result.

1 2. The method as claimed in Claim 1, wherein the following additional step is
2 carried out before step b):
3 - estimating the magnitude of the step DC disturbance by separate evaluation of
4 the baseband signal at the times before and after Tst;
5 wherein the calculation process in step b) takes the estimated magnitude of the step
6 DC disturbance into account; and wherein the calculation in step c) is carried out by
7 subtracting the calculated time profiles from the digital baseband signal, in order to
8 produce the various step-corrected baseband signal versions.

1 3. The method as claimed in Claim 1, further comprising the steps of:
2 - predetermining first time intervals with a specific interval length at the start
3 and/or at the end of the burst, and
4 - carrying out the correction for the step DC disturbance only when Tst is
5 outside this first time interval.

1 4. The method as claimed in Claim 1, wherein when T_{st} is within a second time
2 interval in the burst, the step-corrected baseband signal is produced by means of
3 various time profiles.

1 5. The method as claimed in Claim 4, wherein
2 - the second time interval is a time interval in which the training sequence
3 occurs,
4 - the various step-corrected baseband signal versions are correlated with the
5 training sequence which is known in the receiver, and
6 - that step-corrected baseband signal version which has the best correlation
7 result is selected as the step-corrected baseband signal.

1 6. The method as claimed in Claim 2, wherein
2 - the magnitude of the step DC disturbance is calculated taking into account a
3 guard time interval around the determined time T_{st} , with the baseband signal
4 within the guard time interval being ignored in the estimate of the magnitude of
5 the DC disturbance.

1 7. The method as claimed in Claim 1, wherein
2 - the time profile or the time profiles of the step DC disturbance is/are calculated
3 on the basis of a first step model in which a sudden rise occurs in the step flank
4 for a specific data symbol in the digital baseband signal.

1 8. The method as claimed in Claim 1, wherein
2 - the time profile or the time profiles of the step DC disturbance is/are calculated
3 on the basis of a second step model, in which the step flank rises as a ramp function
4 over a time period of two or more data symbols in the digital baseband signal.

- 1 9. A method to compensate for a step DC disturbance in a digital baseband signal
2 in a homodyne radio receiver, comprising the following steps:
- 3 a) determining a time T_{st} at which the step DC disturbance occurs within a burst;
4 b) evaluating the position of the T_{st} within the burst being considered;
5 c) deciding on the basis of the position of T_{st} and/or on the basis of which
6 calculation rule whether the production of a step-corrected baseband signal
7 should be carried out; and
8 if a step-corrected baseband signal is to be generated,
- 9 d) calculating the time profile of the step DC disturbance and calculating this
10 profile from the digital baseband signal in order to produce the step-corrected
11 baseband signal as a function of the calculation rule which was selected in step
12 c).
- 1 10. The method as claimed in Claim 9, wherein step d) includes the following
2 steps:
- 3 d1) estimating the magnitude of the step DC disturbance by separate evaluation of
4 the baseband signal at the times before and after T_{st} ;
- 5 d2) calculating a time profile of the step DC disturbance taking into account the
6 determined time T_{st} and the estimated magnitude of the step DC disturbance;
7 and
- 8 d3) subtracting the calculated time profile of the step DC disturbance from the
9 digital baseband signal, in order to produce the step-corrected baseband signal.
- 1 11. The method as claimed in Claim 9, further comprising the steps of:
- 2 - predetermining first time intervals with a specific interval length at the start
3 and/or at the end of the burst, and
- 4 - carrying out the correction for the step DC disturbance only when T_{st} is
5 outside this first time interval.

- 1 12. The method as claimed in Claim 9, wherein when T_{st} is within a second time
2 interval in the burst, the step-corrected baseband signal is produced by means
3 of various time profiles.
- 1 13. The method as claimed in Claim 12, wherein
2 - the second time interval is a time interval in which the training sequence
3 occurs,
4 - the various step-corrected baseband signal versions are correlated with the
5 training sequence which is known in the receiver, and
6 - that step-corrected baseband signal version which has the best correlation
7 result is selected as the step-corrected baseband signal.
- 1 14. The method as claimed in Claim 10, wherein
2 - the magnitude of the step DC disturbance is calculated taking into account a
3 guard time interval around the determined time T_{st} , with the baseband signal
4 within the guard time interval being ignored in the estimate of the magnitude of
5 the DC disturbance.
- 1 15. The method as claimed in Claim 9, wherein
2 - the time profile or the time profiles of the step DC disturbance is/are calculated
3 on the basis of a first step model in which a sudden rise occurs in the step flank
4 for a specific data symbol in the digital baseband signal.
- 1 16. The method as claimed in Claim 9, wherein
2 - the time profile or the time profiles of the step DC disturbance is/are calculated
3 on the basis of a second step model, in which the step flank rises as a ramp
4 function over a time period of two or more data symbols in the digital
5 baseband signal.